Nevada Site Specific Advisory Board (NSSAB)

Full Board Meeting

Frank H. Rogers Science and Technology Building
755 East Flamingo Rd, Las Vegas, NV
4:00 p.m. – April 19, 2017

Members Present:	Michael Anderson, Arcadio Bolanos, Frank Bonesteel (Vice-Chair), Karen Eastman, Pennie Edmond, Raymond Elgin, Charles Fullen, Richard Gardner, Donald Neill, Steve Rosenbaum (Chair), Edward Rosemark, William Sears, Cecilia Flores Snyder, Richard Stephans, Jack Sypolt, Richard Twiddy, Dina Williamson-Erdag
Members Absent:	Amina Anderson, Michael D'Alessio, Autumn Pietras
Liaisons Present:	Christine Andres (State of Nevada Division of Environmental Protection [NDEP]), John Klenke (Nye County Nuclear Waste Repository Project Office [NWRPO]), Phil Klevorick (Clark County), Vance Payne (Nye County Emergency Management [NCEM])
Liaisons Absent:	Richard Arnold (Consolidated Group of Tribes and Organizations [CGTO]), Carol McKenzie (White Pine County Commission), Jonathan Penman-Brotzman (U.S. National Park Service [NPS]), Dan Schinhofen (Nye County Commission), Delon Winsor (Esmeralda County Commission)
Student Intern:	Anthony Graham (University of Nevada, Las Vegas [UNLV])
Department of Energy (DOE):	Robert Boehlecke, Jhon Carilli, Catherine Hampton, John Myers, Kelly Snyder (Deputy Designated Federal Officer [DDFO]), Bill Wilborn
Facilitator:	Barb Ulmer (Navarro)
Contractors:	Irene Farnham, Brian Haight, Sharad Kelkar, Marc Klein, Dona Merritt, Ken Rehfeldt (Navarro); Chuck Russell (Desert Research Institute [DRI])

Open Meeting/Chair's Opening Remarks

Chair Steve Rosenbaum provided the NSSAB with a positive status regarding his recovery from recent medical issues. Upon the request of Chair Rosenbaum, Vice-Chair Frank Bonesteel chaired the Full Board meeting. Vice-Chair Bonesteel informed the Board that a new liaison from White Pine County Commission, Carol McKenzie, will be joining the NSSAB. Following the Chair's and Vice-Chair's opening remarks, Member Edward Rosemark moved to approve the agenda as presented. The motion was seconded and passed unanimously.

Public Comment

There was no public comment.

U.S. DOE Update (*Robert Boehlecke, DOE*)

Mr. Robert Boehlecke opened with an update that the Federal budget for fiscal year (FY) 2017 is currently under a continuing resolution (CR) and awaiting a decision whether the CR will continue for the rest of the fiscal year or other actions will be taken by Congress. The Environmental Management (EM) Nevada Program does not anticipate any significant impacts to FY 2017 planned activities. For FY 2018, the EM Nevada Program is awaiting the rollout of the President's budget to Congress.

For groundwater activities, the Underground Test Area (UGTA) team is working toward completion of the Rainier Mesa/Shoshone Mountain (RM/SM) Flow and Transport Model Report in the October 2017 timeframe. An External Peer Review for RM/SM, including scientific experts from multiple disciplines from outside the UGTA team, will be conducted the first part of FY 2018.

Mr. Boehlecke updated that field activities are scheduled for Clean Slate II on the Tonopah Test Range from June – October 2017. Activities will include the excavation and packaging of plutonium-contaminated soil and transported per U.S. Department of Transportation regulations and disposed at the Area 5 Radioactive Waste Management Site (RWMS) at the Nevada National Security Site (NNSS). The EM Nevada Program coordinates its field activities with the U.S. Air Force in order to minimize any impacts to its missions. Estimates involve 300 truckloads over the course of the summer, tentatively five loads per day, and four days per week. The EM Nevada Program is planning briefings for communities along this route to provide additional community outreach, information about the transportation, and to answer any community questions. Briefings will be provided to the Nye and Esmeralda County Commissions, Beatty Town Advisory Board, along with any public in attendance, and the local emergency planning committees for both Nye and Esmeralda County. A fact sheet on Clean Slate II will be available at all these locations. These shipments include typical low-level waste (LLW) and follows the same route along U.S. Highway 95 that other generators utilize to transport waste to the NNSS.

Mr. Boehlecke reported that preliminary planning has commenced for the next EM tabletop exercise for FY 2018. Proposed dates will be discussed at the next meeting of the LLW Stakeholders Forum that is scheduled for May 24, 2017 in Las Vegas, Nevada.

The EM Nevada Program continues to collaborate with the CGTO regarding revegetation efforts at the 92-Acre Area at the Area 5 RWMS. The CGTO has provided its recommendations. The CGTO and the EM Nevada Program will work on a final plan for FY 2018 on the best approach to move forward with the revegetation effort.

Mr. Boehlecke noted that the transition of the EM Nevada Program from the National Nuclear Security Administration (NNSA) is continuing. The EM contractor, Navarro Research and Engineering, Inc., is now administered through the EM Consolidated Business Center in Cincinnati, Ohio as an EM contract. The transition of Nevada's EM Federal staff to EM Human Resources should be complete by next month. The EM Nevada Program will still remain a part of the Nevada Field Office in regard to the services provided by the NNSA and the collaboration with NNSA's subject matter experts on activities at the NNSS.

Mr. Boehlecke concluded that technical comments were received from NDEP on the permit modification application for the proposed mixed LLW (MLLW) cell. The EM Nevada Program is finalizing its responses to these comments. Once the EM Nevada Program has received notification from NDEP that the permit modification is in order, the document will go out for a public comment period for 45 days. After the public comment period and if NDEP approves the permit modification, construction is planned to commence in late summer through the fall 2017 time frame. This provides sufficient time to complete construction prior to the capacity fill date of the current MLLW cell.

Liaison/Student Intern Updates

Clark County (*Phil Klevorick*)
Liaison Phil Klevorick updated that he will be attending the National Transportation Stakeholders Forum in Pittsburgh, Pennsylvania in June 2017, and the agenda for the conference is available. During the EM transition, Liaison Klevorick requested that the message be relayed that the relationship between the DOE and the liaisons has improved dramatically over the years, and there is a continued desire to work together into the future.

NWRPO (*John Klenke*)
Liaison John Klenke had nothing to report.

NDEP (*Christine Andres*)
Liaison Christine Andres noted that NDEP will release a public notice for the MLLW permit modification application. If requested, NDEP will hold a public meeting during the 45 day public comment period. Liaison Andres stated that the budget for NDEP has been approved by the Nevada State Legislature, although there are other NDEP bureaus that receive funding from the U.S. Environmental Protection Agency that are awaiting any budget effects.

UNLV Student Intern (*Anthony Graham*)
Student Intern Anthony Graham reported that students have returned from spring break and are focusing on the upcoming finals week. He has been promoting the EM Nevada Program kiosk that was recently installed at the university's library. Student projects based on the kiosk this semester will be mostly for extra credit due to the short lead time for planning. For the fall semester, professors can plan to include kiosk projects in their syllabi depending on the availability of the kiosk at UNLV through the end of the calendar year. In the history department, there are a number of courses that will be utilizing the kiosk for projects based on the history of the Nevada Test Site. Student Liaison Graham contacted Phi Eta Sigma, UNLV's chapter of the National Honor Society, regarding interest in attending an NNSS tour or an NSSAB meeting.

Radioactive Waste Acceptance Program Assessment Improvement Opportunities - Work Plan Item #4 (*Jhon Carilli, DOE*)

- **NSSAB Work Plan Item #4**
  - Provide a recommendation for ways to improve the RWAP assessment process during the September 20, 2017 Full Board meeting
    - Up to two NSSAB members are invited to observe a RWAP facility evaluation and present their observations to the Full Board
- **Background**
  - Cold War-related activities and nuclear research generated low-level waste (LLW) at sites across the country
  - DOE is responsible for consolidated and disposing LLW generated by DOE clean-up activities
  - Annually, the NNSS historically disposes approximately 5% of the total waste generated in the EM Program
- **Regulatory Authority for LLW Disposal**
  - Atomic Energy Act of 1954, as amended
  - DOE Order 435.1 and DOE Manual 435.1-1
    - Disposal Authorization Statement
      - Performance Assessment/Composite Analysis (PA/CA) - analysis of the impacts to protect workers and public
      - Disposal Facility Monitoring Plan
      - Preliminary Closure Plan
      - NNSS Waste Acceptance Criteria
      - Annual review of PA/CA
    - Independent review of LLW Federal Review Group
- **Advantages of LLW Disposal at the NNSS**
  - Low precipitation
  - High evapotranspiration
  - No surface water
  - No pathway to groundwater
  - Isolated location
- **Key Terminology**
  - Waste Generator Sites: DOE and some Department of Defense sites that generate LLW and mixed low-level waste (MLLW) radioactive waste
  - Waste Stream: a waste or group of wastes with similar physical, chemical, and radiological properties from a process or a facility
  - NNSSWAC: document that establishes rigorous disposal acceptance criteria for waste generator sites and their proposed waste streams
  - Waste Profile: application by a generator to dispose a waste stream at the NNSS that demonstrates compliance with the NNSSWAC
- **RWAP**
  - The RWAP consists of three activities:
    - WAC (Facility Evaluations and Waste Acceptance Review Panel)
    - Coordination of Waste Certification Officials
    - Waste Assistance and Technical Support
- **Facility Evaluation Background**
  - Utilizing a schedule, the RWAP team reviews every active generator on an annual basis (generally with an on-site visit)
  - Conducted by certified RWAP personnel at the generator's location:

        - Audit – *comprehensive* Waste Certification Program review
            - Review of entire program
            - Multiple day visit – 3 days on average
            - Planned – generator receives notification and provides requested program documents for RWAP review before on-site visit
        - Surveillance – *focused* Waste Certification Program review
            - Review of a specific area with limited scope
            - Visit lasts 1-2 days on average
            - Generator receives minimal notification for security measures and logistical coordination
- **Purpose of RWAP Facility Evaluations**
    - Facility Evaluations evaluate compliance and implementation for the following program elements
        - Quality Assurance (QA)
        - Waste Traceability
        - Resource Conservation and Recovery Act (RCRA) Waste Characterization (hazardous waste characterization)
        - Radiological Characterization
        - Transportation
- **QA**
    - Verify that generator has an approved site QA Plan demonstrating compliance to the NNSSWAC
    - Verify that generator has an approved NNSSWAC Implementation Crosswalk and performed an annual review of referenced procedures, processes, and methods
        - Implementation Crosswalk – generator's description of how NNSSWAC requirements are met
    - Verify that the generator has the required training to perform self-assessments
    - Verify waste disposal packaging and contents
- **Waste Traceability**
    - Verify waste containers are controlled to ensure integrity and packages not comprised
    - Verify inspections and acceptance testing are conducted
    - Verify containers are properly stored, moved, and shipped
    - Verify control of measuring and test equipment
- **RCRA Waste and Radiological Characterization**
    - Verify that waste characterization methods and procedures employed document the physical and chemical characteristics
    - Verify that generator's waste characterization documentation matches the approved waste profile submitted to DOE
    - Verify that controls are in place to verify and evaluate stabilization methods, packaging, labeling, sealing, separation, segregation, and prohibited item removal
- **Transportation**
    - Verify that drivers are U.S. citizens
    - Verify that generators instruct drivers to use acceptable routes (i.e., avoid the Las Vegas metropolitan area and the O'Callaghan-Tillman Memorial Bridge)
    - Verify that generators check packages before leaving their site
    - Verify that generators are instructed to contact NNSS if shipment will be delayed
- **DOE Role**
    - Oversees waste acceptance and disposal and approve waste profiles
    - Ensures environmental protection and worker and public safety

    - Observes contractor during Facility Evaluations
    - Documents observations and provides feedback to the contractor RWAP auditors and interfaces with the site Federal representatives
- **NDEP Role**
    - Oversees hazardous waste management as outlined in the State of Nevada RCRA permit (includes Federal Facility Agreement and Consent Order [FFACO])
    - Provides joint oversight with DOE by participating in RWAP processes per an Agreement in Principle
    - Attends and observes DOE, NNSS Federal contactor, and generator during Facility Evaluations
    - Reviews waste profiles for compliance with NNSSWAC
- **Contractor Role**
    - Reviews waste profiles for compliance with the NNSSWAC
    - Maintains and provides technical support for NNSSWAC
    - Performs Facility Evaluations (audits, surveillances, and verifications) and oversees any corrective actions
    - Recommends approval of waste streams that can be safely disposed at the NNSS
    - Ensures the disposal facility will continue to meet requirements
    - Ensures environmental protection and worker and public safety
    - Ensures waste originated from DOE or Department of Defense
- **General Auditor Training**
    - Required Reading
        - RWAP procedures
        - NNSSWAC
        - Waste generator approval process
        - DOE Order 435.1 and Manual 435.1-1, “Radioactive Waste Management”
    - On-the-job training
        - Checklist review and completion
        - Corrective action plan and objective evidence reviews
    - Classroom training
        - Root cause analysis
        - Lead auditor classroom training; requires passing score on exam
    - Proficient oral and written communication skills
- **Auditor Specific Training**
    - Auditor: participate in a minimum of two RWAP Facility Evaluations under the guidance of a qualified Subject Matter Expert (SME)
    - Lead Auditor: participate in a minimum of two RWAP Facility Evaluations as Lead Auditor (LA) under the guidance of a qualified SME/LA
    - Required to undergo QA certification
- **Functional Specific Training**
    - Radiological Characterization Auditor: participate in a formal training course in radiation detection, radiochemical analysis, or radioactive waste management
    - Chemical Characterization Auditor: participate in a formal RCRA training course
    - Transportation Auditor: U.S. Department of Transportation Hazardous Transportation Training
- **Facility Evaluation Process**
    - Notify waste generator of Facility Evaluation
    - Request program documents for review
    - Review shipment discrepancy log
    - Develop checklist

- Brief RWAP team of scope & responsibilities
- Perform interviews of generator personnel
- Observe work being performed
- Conduct in-briefing with generator personnel
- Evaluate and document objective evidence
- Issue report approximately 30 days after Facility Evaluation
- Brief generator during exit meeting of any Observations and/or Findings
    - Observation – a weakness in a generator's QA or waste certification program that, if left uncorrected, could result in a condition adverse to quality
        - Requires a written response by generator
        - Maintains approval to ship waste to NNSS
    - Finding – document that tracks deficient (requirements violation) conditions adverse to quality until satisfactorily resolved
        - Requires in-depth investigation by generator
        - May result in suspension of approval to ship waste to NNSS
- Formal Finding closeout process:
    - Generator determines a root cause based on its investigation
    - Generator provides a Corrective Action Plan (CAP) to RWAP that identifies problem and its proposed solution
    - DOE reviews the CAP and accepts or rejects until satisfied that generator has a viable solution
    - RWAP performs on-site verification once CAP is completed
    - If a suspension was put in place, it may be lifted once verification activities have been completed
    - Process takes approximately 60 days

- **NSSAB Path Forward**
    - Up to two NSSAB Members to observe an RWAP Facility Evaluation (surveillance) for Advanced Mixed Waste Treatment Plant, Idaho Falls, Idaho on August 28 - 31, 2017
    - NSSAB Members report their observations to the Full Board at the September 20, 2017 meeting
    - Full Board provides a recommendation for ways to improve the RWAP assessment process at the September 20, 2017 meeting

In response to Board questions, the following clarifications were provided:

- Typical LLW that is disposed at the Area 5 RWMS includes contaminated metal, construction debris, soils, personal protection equipment, tools, etc.
- Only LLW/MLLW generated at a DOE or Department of Defense facility may be disposed at the Area 5 RWMS. At the end of the second quarter of FY 2017, classified non-radioactive hazardous waste was less than one percent of the total cumulative waste received and disposed at the Area 5 RWMS.
- On average historically, five percent of the total waste generated in the EM Program complex-wide is disposed at the NNSS, four percent is disposed at commercial facilities, and the remaining 91 percent is disposed on-site where it was generated.
- Any liquid waste must first be solidified before being considered for disposal at the Area 5 RWMS per the NNSSWAC.
- Every approved generator has its own procedures for complying with the NNSSWAC. The Implementation Crosswalk is important to document procedures for how the generator meets NNSSWAC requirements.

In summary, Members Arcadio Bolanos and Richard Gardner volunteered to observe the RWAP surveillance for the Advanced Mixed Waste Treatment Plant, Idaho Falls, Idaho on August 28-31, 2017. Chair Rosenbaum will be the first alternate and Member Richard Twiddy will be the second alternate. Since the RWAP issue report is generally available approximately 30 days after a Facility Evaluation, an initial brief update by attending members on their observations will be provided at the September 20, 2017 Full Board meeting with a final update given at the first Full Board meeting of FY 2018. From these member updates, the NSSAB will discuss recommendations for possible improvements to the RWAP assessment process.

Internal Peer Review Process Improvement – Work Plan Item #6 (*Member Richard Twiddy*)

Member Twiddy stated that he and Members Rosemark and William Sears attended the RM/SM Internal Peer Review meeting for the GoldSim Model on March 28, 2017 at the Desert Research Institute. He spoke on behalf of the NSSAB subcommittee and provided a written overview that was available to the Board in the meeting packet. Member Twiddy explained that he developed a list of questions on items included in well-run, productive meetings. During the internal peer review meeting, committee members were respectful of one another's opinions and concerns. The modelers and the presenters were well versed in the subject area and were able to answer every question and address any concerns.

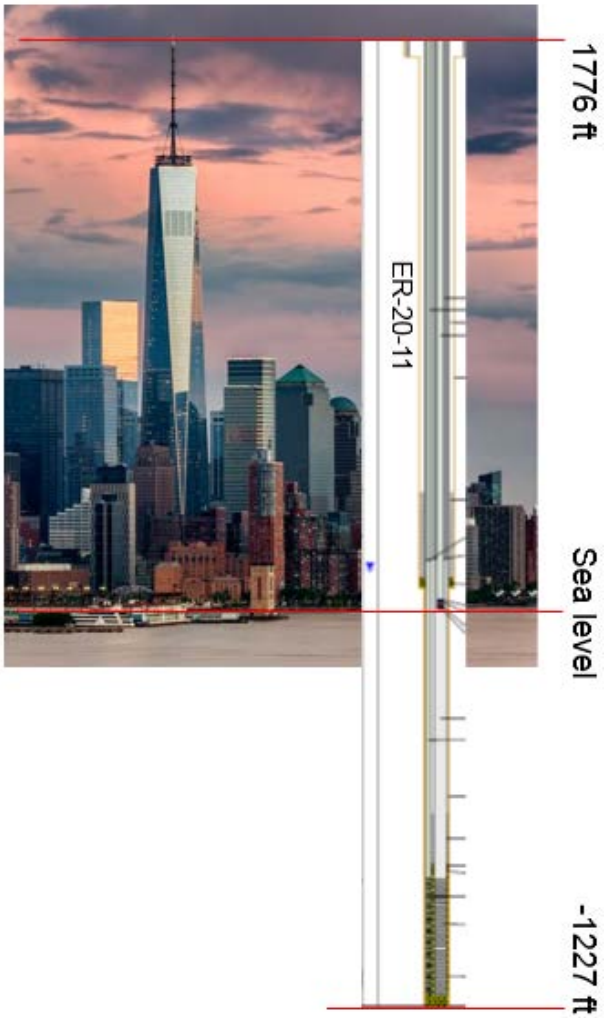
Member Twiddy continued that the NSSAB subcommittee noted that it would be advantageous for the presenters and possibly the committee members to use a voice enhancement system. The NSSAB subcommittee also felt that it would be beneficial to appoint a facilitator to assist the chairperson in moving the meeting along. Member Twiddy concluded that it was an outstanding meeting that was completed on time, covered all discussion topics, and concluded with a clear path forward. Member Sears added that he also felt that it was a good meeting, although he would have found it helpful to have more general information available before attending the meeting. Member Rosemark also agreed that it was a good meeting, although aircraft flying over the building made it difficult to hear throughout the day.

After NSSAB discussion, Member Twiddy made a motion that the NSSAB submit a partial recommendation to DOE based on the NSSAB subcommittee's observations of the RM/SM Internal Peer Review for the GoldSim Model by incorporating the recommendations included in the NSSAB subcommittee's written update with the understanding that this recommendation may be modified based on observations of subsequent internal peer reviews conducted during FY 2017. The motion was seconded and passed unanimously.

Groundwater Sampling Techniques - Work Plan Item #5 (*C. E. Russell, DRI*)

- **NSSAB Work Plan Item #5**
  - From a community perspective, provide a recommendation to the DOE, regarding use of existing and potential groundwater sampling techniques on the NNSS
- **Objectives**
  - Inform NSSAB members of potential challenges that can be encountered during well purging and sampling
  - Review work being conducted by the Underground Test Area (UGTA) Activity to evaluate alternative sampling technologies and to optimize existing processes
  - Invite NSSAB members to participate in the process
- **Considerations for Well Sampling**
  - Sample objective

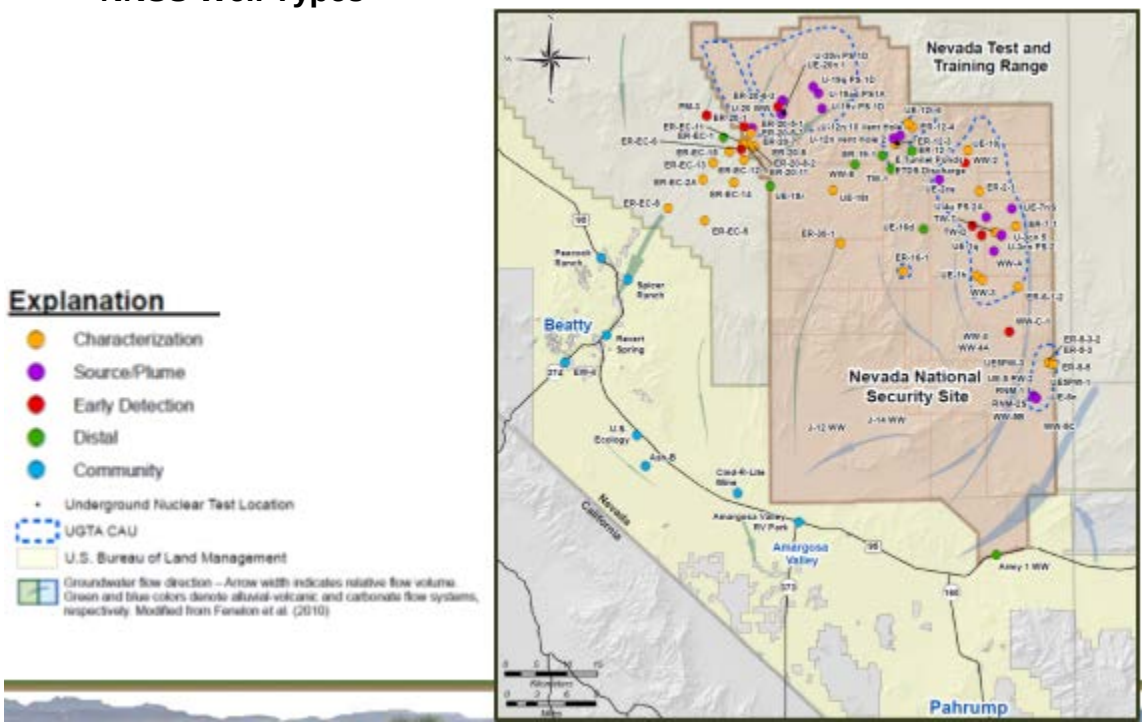
    - Analyte (contaminant) of concern and its properties
        - Volume of the sample
    - Conceptual model of the site
    - Aspects of well construction
        - Purge volume
    - Frequency of sampling
- **NNSS Sampling Challenges**
    - Great depth to water
    - Unique well completions
        - Limited technology options
        - Logistical difficulties when sampling wells with multiple zones
        - Deep wells store lots of stagnant water
            - One casing volume can be several thousand gallons
    - Difficult and expensive to achieve large volume purge standards
        - Takes as much power as an average residential home uses in 3 days to lift 3 casing volumes to the surface
        - Remote and limited infrastructure
        - Storage of waste water at the surface
- **Putting it into Perspective**
    - A balancing act to optimize number and quality of samples based on limited resources



- **Purging – Industry Standards**
  - Purge
    - Large Volume Purge – 3 to 5 casing volumes
    - Purge to Stabilization
    - Micro Purge (minimal drawdown)
  - No Purge
    - Grab Samplers
    - Passive Samplers
- **UGTA Efforts to Increase Efficiencies and Decrease Costs**
    - Integrated Groundwater Sampling Plan
    - Topical Committee on Well Development and Sampling
    - Sampling Implementation Plan
    - Field comparison of samples collected by bailing versus Jack Pump versus Submersible Pump
    - Sample cost tracking
    - Tritium bailer evaluation
    - Panacea Pump
- **Integrated Groundwater Sampling Plan**
  - Comprehensive, integrated plan for collecting and analyzing groundwater samples to achieve UGTA objectives
    - Groups wells into categories based on sampling objectives
      - Category may change based on analytical results, modeling results, and/or other well-specific conditions
    - Identifies contaminants of concern and threshold concentrations that initiate specific actions per category (well type)
    - Integrates wells monitored under other programs if dual purpose
    - Standardizes analytical suite (radionuclides analyzed) and frequency per well type
    - Identifies suitable sample technologies based on well type and well construction
- **Well Sampling Locations by Types for Each CAU**

Type	Frenchman Flat	Pahute Mesa	Rainier Mesa/ Shoshone Mountain	Yucca Flat/ Climax Mine	Total
Characterization	2	21	8	8	39
Source/Plume	3	10	2	5	20
Early Detection	0	5	2	5	12
Distal	0	2	4	1	7
Community	0	9	0	0	9
Total Sampling Locations	**5**	**47**	**16**	**19**	**87**

- **NNSS Well Types**



- **Topical Committee on Well Development and Sampling**
  - Identified more cost-effective methods for collecting groundwater samples
    - Literature review of seven mobile and eight permanently deployed technologies for use in a variety of well designs found on the NNSS
- **Topical Committee Recommended Technologies**
  - No Purge
    - Bailer (grab sampler)
    - Snap Sampler (passive sampler)
  - Large Volume Purge/Purge to Stabilization
    - Submersible Pump
    - Jack Pump
  - Purge to Stabilization/Micro Purge
    - Bennett Pump
    - Panacea Pump
- **Sampling Implementation Plan**
  - Integrated Groundwater Sampling Plan partially implemented FY 2015 – 2017 due to competing needs and limited resources
  - Implementation plan prioritizes sampling efforts so that UGTA will be compliant by FY 2020
  - Integrates ongoing water-level monitoring
  - Recommendations well-specific sampling technology
    - Use of bailer for early detection, distal and community monitoring wells where tritium is the only radionuclides
    - Recommends alternative analytical suites for characterization wells that cannot be purged using existing technology
  - Assigns organizational responsibility for sampling specific well types
  - Improves quality assurance protocols

- **Field Comparison of Samples**
  - Study conducted summer 2014 at ER-EC-11, ER-20-8, and ER-20-8 #2
  - Compared relative costs, technology limitations, analytical results and appropriate purge volumes
  - Collected multiple samples using a variety of techniques (Bailer, Submersible Pump, and Jack Pump)
  - Samples collected when appropriate purge volumes were reached and water-quality parameters (cloudiness, pH, electrical conductivity, dissolved oxygen and temperature) stabilized
  - Tritium monitored over time to determine changes while purging
  - Bailed samples depths selected based on analysis of previously collected flow logs
  - Tritium stabilized more rapidly than all other parameters (0.25 well volumes)
  - All parameters but turbidity stabilized more rapidly than tritium (0.75 well volume)
- **Comparison Results**
  - Bailer sample depth should be identified based on temperature or flow logging
    - Limited volume samples
    - Results support bailing well types where the question focuses on “Is tritium present” (i.e. distal, early detection, and community wells)
  - Jack Pump – resource intensive to deploy but only way to purge small diameter characterization or source plume wells
  - Submersible Pump – resource intensive but the current technology of choice for large volume purge associated with characterization and source plume wells
  - Characterization and source wells can be sampled after parameters stabilize or after three well volumes
- **Sample Cost Tracking**
  - Estimates of average labor hours required to deploy various technologies included in the field comparison report (Jack Pup 560 hours, Submersible Pump 305 hours, Bailer 90 hours)
    - These do not reflect a standardized cost/resource estimating methodology, nor was it cradle to grave
    - UGTA is in process of developing a standardized method for capturing these costs to ensure future evaluations of appropriate technologies considers this important factor
- **Historical Evaluation of Pumped Versus Bailed Samples**
  - UGTA conducting evaluation of historical efforts where both bailed and pumped samples have been collected from the same well
    - Objective is to develop a greater body of evidence supporting the use of bailed samples (without purging) at distal, early detection, and community wells
- **BESST, Inc.**
  - Manufacturer of Panacea Pump
  - Potential alternative to Jack Pump
  - Demonstration of technology on the NNSS in September 2003
    - Depth to water was 1,650 feet
    - Pump deployed to 2,520 feet
    - 25 minutes to deploy to total depth, 9 minutes for water to reach surface once pump was pressurized
    - 1,250 pounds per square inch drive pressure – used 3 compressed bottles of nitrogen gas, discharge was 0.75 liters per minute

- **Purpose of Factory Visit to BESST, Inc.**
    - Observe and evaluate technology for health and safety concerns
    - Discuss potential modifications to technology to optimize for use on NNSS
    - Members of the Topical Committee who visited the factory will recommend “go” or “no go” to DOE for purchase
- **NSSAB Participation**
    - Updates tonight from Member Rosemark and Vice-Chair Bonesteel on their observations from the factory field trip to BESST, Inc.
    - Provide recommendations/suggestions based on this presentation and member updates
    - Continued updates to NSSAB at critical junctures
    - Final NSSAB recommendation due at August 16, 2017 Full Board meeting

In response to Board questions, the following clarifications were provided:

- Water purged from NNSS wells is discharged to land surface and collected in lined sumps located in close proximity to each well and monitored until evaporated, unless the water is tested at more than 400,000 picocuries/liter of tritium, then it is containerized. There is a waste management plan associated with the handling of any waste water from the purging of an NNSS well. There is a prohibition for injecting water back into wells in Nevada unless permitted. The sump lining is a durable, thick plastic which lasts about 10-12 years in the desert environment and is monitored and replaced as needed.
- Deep wells drilled at the NNSS with small diameter feeds are cleaned before low-volume sampling in a variety of ways, i.e. utilizing cleaner fluids for wells with considerable formation damage, swabbing, and bailing.
- A representative sample can be achieved by utilizing the Micro Purge method without utilizing a packer or isolating the well zone.
- A new well drilled on the NNSS is normally used as a characterization well for three-five sampling cycles in order to understand the geochemistry of the site and reclassified later as more information is collected and understood about the well site.
- Approximately three years ago, the cost of a Panacea Pump built to NNSS specifications was ~$160,000. The additional costs of maintenance, support, and training is not known at this time and would be determined during the federal contracting process.
- Compared to other sampling technologies employed at the NNSS, the Panacea Pump would be a relatively inexpensive alternative.
- BESST Inc. has deployed hundreds of these pumps. For example, at Hill Air Force Base there are groundwater sampling pumps buried in the ground so they are no longer retrievable.

Vice-Chair Bonesteel reported that he and Member Rosemark accompanied UGTA subject matter experts (SME) from the NNSS to observe the Panacea Pump at BESST, Inc., in San Rafael, California on March 14, 2017. He informed the Board that the president of the company, along with his employees, provided a detailed presentation regarding the groundwater sampling technologies that the company has in the field. Vice-Chair Bonesteel noted that a Panacea Pump mounted on a trailer was available for viewing by the group. The presentation, the viewing of the Panacea Pump, and a real-time sampling demonstration, along with extensive questions, took a considerable portion of the day. Member Rosemark added to the discussion some of the technical advantages of the pump.

After extensive Board dialogue and questions, Member Rosemark made a motion that DOE pursue obtaining additional information on the inclusive costs and test the performance of the Panacea Pump at several different wells on the NNSS as a potential groundwater sampling technique. The motion was seconded and passed unanimously.

Other NSSAB Business (*Frank Bonesteel, Vice-Chair*)

Vice-Chair Bonesteel informed the Board that he and Chair Rosenbaum will be attending the spring EM SSAB National Chairs' Meeting hosted by the Paducah Site Office, Paducah, Kentucky on May 8 -11, 2017. Chair Rosenbaum presented his proposed Round Robin topics to be given during this meeting to and welcomed input from members and liaisons. Member Gardner made a motion to accept Chair Rosenbaum's round robin slide and presentation. The motion was seconded and approved unanimously.

Two letters were provided to Board members for informational purposes:

- NSSAB Recommendation for FY 2019 Baseline Prioritization (Work Plan Item #8) – dated March 15, 2017
- DOE Response to NSSAB Recommendation regarding FY 2019 Baseline Prioritization (Work Plan Item #8) – dated March 22, 2017

Liaison/Student Intern Updates (continued)

NCEM (*Vance Payne*)

Liaison Vance Payne reported that Nye County has participated in three drills in 2017. Two of these drills were tabletop exercises and the third was for an active assailant scenario. The NCEM has a meeting this month with the Emergency Preparedness Working Group (EPWG) to discuss options to increase Nye County's capability for radiological response events. Including a radiological response component would strengthen the hazardous materials plan which is developed through the state's emergency response mission. Liaison Payne noted that DOE purchased radiation detection devices about 10-12 years ago for counties on the transportation corridor, although half of these devices are now non-operational. He is looking for funding to replace these radiation detection devices using grants through EPWG, which was setup by DOE in 2000 to enhance emergency response capabilities for six counties along the transportation corridor. Liaison Payne informed the Board of kick-off meetings initiated by the State of Nevada in May 2017 that will include state and local organizations named Preventive Radiological/Nuclear Detection (PRND) in order to develop a coordinated plan for detecting, assessing, and responding to radiological and nuclear threats or incidents within Nevada. He will provide status updates on the Nevada PRND program in future NSSAB meetings. Liaison Payne responded to a question that the hospital in Tonopah, Nevada, is closed and will not reopen. In situations where a radiological incident occurs, emergency services in Nye County would be assisted by the National Guard from Reno, Nevada, who have flight and radiological capabilities. Vance Payne replied to another comment regarding fiber optic communications lines installed by Valley Electric Association (VEA) from Pahrump to Fish Lake Valley, Nevada. Communications information can pass through these fiber optic lines along with high-tension electric power. VEA provided this service initially to the Nye County emergency communications dispatch and computer servers that has improved 9-1-1 services in Nye County. This improved 9-1-1- capability is hoped to reach Tonopah, Nevada by the end of this year.

Communication Improvement Opportunities (Work Plan #9)

There were no new recommendations for Communication Improvement Opportunities – Work Plan #9.

Meeting Wrap-Up and Adjournment

Upcoming calendar of events:

- Devils Hole Workshop – May 3 - 5, 2017 at the Beatty Community Center in Beatty, Nevada
- EM SSAB National Chairs' Meeting – May 8 – 11, 2017 at the Paducah Site Office in Paducah, Kentucky
- LLW Stakeholders' Forum – May 24, 2017 at the Frank H. Rogers Science and Technology Building in Las Vegas, Nevada
- National Transportation Stakeholders Forum – June 5 – 8, 2017 in Pittsburgh, Pennsylvania
- Next Full Board Meeting – June 21, 2017 at the Frank H. Rogers Science and Technology Building in Las Vegas, Nevada with educational session at 3 p.m. and meeting at 4 p.m.

Any questions on the calendar of events, please contact the NSSAB Office at 702-630-0522.

Member Stephens moved that the meeting be adjourned. The motion was seconded and passed unanimously.

Meeting adjourned at 8:07 p.m.